

TRANSMISSION COMPANY OF NIGERIA

To: Head (ISO), TCN - Abuja
From: General Manager, NCC, Osogbo

DAILY OPERATIONAL REPORT OF WEDNESDAY 06/02/2019

FOR: EVENTS OF TUESDAY 05/02/2019

1.0 EXECUTIVE OPERATIONS SUMMARY:

1.1 GENERATION PROFILE: NATIONAL STATISTICS

DETAILS	MW	HRS	DATE
PEAK DEMAND FORECAST (CONNECTED + SUPPRESSED LOAD)	23,960	21:15	05/02/2019
GENERATION CAPABILITY	5940.5	-do-	-do-
UNITS ON BAR CAPABILITY AT PEAK	5305.1	-do-	-do-
PEAK GENERATION	5014.7	-do-	-do-
LOWEST GENERATION	3589.2	08:00	05/02/2019
8-HOURLY DURATION PEAK	4100.9	0100-0800	-do-
	4152.1	0900-1600	-do-
	5014.7	1700-2400	-do-
PEAK GENERATION TO DATE	5222.3	21:00	18/12/2017
MAXIMUM AVAILABLE CAPACITY TO DATE	7652.6	06:00	14/04/2014
MAXIMUM ENERGY GENERATED (MWH) TO DATE	109,372.01	0000-2400	02/02/2016

1.2 CRITICAL VOLTAGE

DETAILS	KV	STATION	HRS
NOMINAL VOLTAGE	330		
STATUTORY LIMITS	280.5 - 346.6		
HIGHEST VOLTAGE FOR THE DAY	349	Ikot-Ekpene & New Haven T/S	04:00 & 08:00
LOWEST VOLTAGE FOR THE DAY	300	Gombe & Yola T/S	07:00 & 14:00

1.3 FREQUENCY RANGE

DETAILS	HZ	HRS
NOMINAL FREQUENCY	50	
STATUTORY LIMITS	49.75-50.25	
HIGHEST FREQUENCY	50.46	13:48
LOWEST FREQUENCY	49.80	15:44

1.4 SYSTEM COLLAPSE UP DATE

		Highest No of days ever attained in-between total collapses: 134												No. of days since last total collapse: 12
		Highest No of days ever attained in-between partial collapses: 242												No. of days since last partial collapse: 299
		Jan	Feb.	Mar.	Apr	May	Jun	Jul	Aug	Sep.	Oct	Nov	Dec	Total
2010	Total	---	3	1	--	3	3	3	--	2	2	1	4	22
	Partial	1	--	--	1	1	3	4	4	3	2	--	1	20
2011	Total	--	--	--	--	4	3	1	1	1	2	1	--	13
	Partial	--	1	1	--	--	--	--	1	--	1	2	--	6
2012	Total	--	--	2	1	5	2	1	--	--	2	2	1	16
	Partial	--	--	2	3	--	--	--	--	1	--	1	1	8
2013	Total	--	1	2	2	3	4	1	1	1	1	4	2	22
	Partial	--	--	--	--	--	--	--	--	2	--	--	--	2
2014	Total	2	--	--	2	0	3	1	0	0	1	0	0	9
	Partial	--	--	0	0	1	0	0	0	0	0	2	1	4
2015	Total	1	0	1	0	2	0	1	0	0	0	1	0	6
	Partial	--	--	1	0	2	0	0	0	0	1	0	0	4
2016	Total	--	--	2	3	6	5	0	0	1	1	2	2	22
	Partial	--	--	1	0	1	3	1	0	0	0	0	0	6
2017	Total	5	3	0	3	1	1	1	0	0	1	1	--	15
	Partial	1	0	1	0	0	0	1	0	3	3	--	--	9
2018	Total	5	1	0	0	0	1	1	1	2	--	--	1	11
	Partial	0	0	0	1	0	0	0	0	0	--	--	--	1
2019	Total	4	--	--	--	--	--	--	--	--	--	--	--	4
	Partial	--	--	--	--	--	--	--	--	--	--	--	--	4

1.5 BREAKDOWN OF PEAK & OFF PEAK GENERATION (NATIONAL PEAK & OFF PEAK)

STATION	TURBINE	PEAK GEN. (MW)	OFF-PEAK GEN.(MW)
1 KAINJI	HYDRO	416	203
2 JEBBA	HYDRO	374	278
3 SHIRORO	HYDRO	418	109
4 EGBIN ST2 - 5	STEAM	424	385
5 SAPELE	STEAM	0	28
6 DELTA	GAS	306	259
7 AFAM IV-V	GAS	50	50
8 GEREGU GAS	GAS	278	180
9 OMOTOSHO GAS	GAS	127.7	121.5
10 OLORUNSOGO GAS	GAS	181.1	142.9
11 GEREGU NIPP	GAS	252	229
12 SAPELE NIPP	GAS	98.6	91.6
13 ALAOJI NIPP	GAS	0	73.5
14 OLORUNSOGO NIPP	GAS	106.1	91.2
15 OMOTOSHO NIPP	GAS	107.3	105.1
16 ODUKPANI NIPP	GAS	316.1	213.2
17 IHOVBOR NIPP	GAS	105.1	102.5
18 OKPAI	GAS	178	173
19 AFAM VI	GAS	281	134
20 IBOM POWER	GAS	86.6	82.5
21 ASCO	GAS	0	0
22 A.E.S	GAS	0	0
23 OMOKU	GAS	0	0
24 TRANS AMADI	GAS	0	0
25 RIVERS IPP	(GAS)	152	121
26 AZURA - EDO IPP	(GAS)	440	150
27 EGBIN ST6	(GAS)	150	150
28 PARAS ENERGY	(GAS)	65.7	64.8
29 GBARAIN NIPP	GAS	103.4	71.4
TOTAL		5014.7	3589.2

1.6 ENERGY GENERATED/ENERGY SENT OUT:

STATION	TURBINE	ENERGY GENERATED		ENERGY SENT OUT	
		MWH	MWH/H	MWH	MWH/H
1 KAINJI	HYDRO	8182.00	340.92	8165.70	340.24
2 JEBBA	HYDRO	8215.00	342.29	8190.28	341.26
3 SHIRORO	HYDRO	4242.00	176.75	4213.35	175.56
4 EGBIN ST2 - 5	STEAM	9186.00	382.75	8670.90	361.29
5 SAPELE	STEAM	110.20	4.59	40.40	1.68
6 DELTA	GAS	6499.30	270.80	6404.70	266.86
7 AFAM IV-V	GAS	1169.50	48.73	1164.08	48.50
8 GEREGU GAS	GAS	4961.70	206.74	4935.25	205.64
9 OMOTOSHO GAS	GAS	2993.00	124.71	2969.30	123.72
10 OLORUNSOGO GAS	GAS	3831.53	159.65	3800.49	158.35
11 GEREGU NIPP	GAS	5632.23	234.68	5613.17	233.88
12 SAPELE NIPP	GAS	2329.76	97.07	2307.77	96.16
13 ALAOJI NIPP	GAS	1428.06	59.50	1423.05	59.29
14 OLORUNSOGO NIPP	GAS	2546.20	106.09	2508.90	104.54
15 OMOTOSHO NIPP	GAS	2529.80	105.41	2511.00	104.63
16 ODUKPANI NIPP	GAS	5683.55	236.81	5647.25	235.30
17 IHOVBOR NIPP	GAS	2253.68	93.90	2233.99	93.08
18 OKPAI	GAS	4235.00	176.46	4107.90	171.16
19 AFAM VI	GAS	4092.23	170.51	4003.00	166.79
20 IBOM	GAS	2039.75	84.99	2031.00	84.63
21 ASCO	GAS	0.00	0.00	0.00	0.00
22 AZURA - EDO IPP	GAS	6018.55	250.77	5993.79	249.74
23 A.E.S	GAS	0.00	0.00	0.00	0.00
24 OMOKU	GAS	0.00	0.00	0.00	0.00
25 TRANS AMADI	GAS	0.00	0.00	0.00	0.00
26 RIVERS IPP	GAS	2895.20	120.63	2883.50	120.15
27 EGBIN ST6	STEAM	3532.00	147.17	3338.80	139.12
28 PARAS ENERGY	GAS	1561.60	65.07	1554.80	64.78
29 GBARAIN NIPP	GAS	2013.20	83.88	2001.10	83.38
TOTAL		98,181.04	4,090.88	96,713.47	4,029.73

1.7A GENERATION POSITION AT 06:00HRS OF WEDNESDAY 06/02/2019

	STATIONS	NO OF UNITS INSTALLED	AVAILABLE UNITS	INSTALLED CAPACITY OF AVAILABLE UNITS(MW)	GENERATION CAPABILITY OF AVAILABLE UNITS(MW)	UNITS ON BAR	CAPABILITY OF UNITS ON BAR (MW)	GENERATION AT 06:00HRS (MW) AT 50.19Hz.	REMARKS
PRIVATISED COMPANIES	KAINJI HYDRO	8	1G5, 6, 11 & 12 4	440	440	1G5, 6, 11 & 12 4	440	394	1G7 - Out on stator winding failure. 1G8 - Out due to oil leakage on governor runner head. 1G9 - Out due to burnt 7.5MVA 33/0.415kV & 183.6MVA 16/330kV station service transformer and generator transformer. 1G10 - Shut down due to thrust bearing temperature problem.
	JEBBA HYDRO	6	2G1 - 4 4	380	375	2G1 - 4 4	369	369	2G5 - Out for annual maintenance. 2G6 - Out due to burnt generator winding and AVR.
	SHIRORO HYDRO	4	411G1 - 4 4	600	600	411G1 & 2 2	300	201	411G1 & 2 - Generation reduced due to low load demand by the Discos. 411G3 & 4 - Out for water management.
	EGBIN STEAM	6	ST2, 4, 5 & 6 4	880	565	ST2, 4, 5 & 6 4	565	565	ST1 - Out due to the unit transformer problem. ST3 - Out on high vibration since 19th June 2017.
	SAPELE (STEAM)	6	0 0	0	0	0 0	0	0	ST1 & 2 - Tripped on high vibration. ST3 - Tripped on low water drum level. ST4 - Out on fault. ST5 - Awaiting major overhaul.
	DELTA (GAS)	18	GT6, 7, 10 - 13, 19 & 20 8	310	310	GT6, 7, 10 - 13, 19 & 20 8	273	273	GT2 - Tripped on transformer differential lockout. GT3 & 5 - Out on generator winding fault. GT4 - Out on loss of excitation. GT8 & 14 - Out on major overhaul. GT9, 15 & 16 - Out due to gas constraint. GT17 - Tripped on bearing vibration more than maximum. GT18 - Out due to generator lockout problem. GT20 - Generation reduced due to high air inlet differential pressure.
	AFAM IV & V (GAS)	8	GT1 1	125	50	GT17 1	50	50	GT11 - 12 - De-commissioned and scrapped. GT13, 14 & 16 - Out on blade failure. GT18 - Out due to gas constraint. GT19 & 20 - Awaiting major overhaul.
	GEREGU GAS	3	GT11 - 13 3	435	435	GT12 & 13 2	290	266	GT11 - Out due to line limitation.
	OMOTOSHO GAS	8	GT1, 2, 6 & 7 4	168	131.4	GT1, 2, 6 & 7 4	131.4	131.4	GT3, 4, 5 & 8 - Out due to gas constraint.
	OLORUNSOGO GAS	8	GT1 - 8 8	336	304	GT1, 2, 4, 5, 6 & 7 6	181	181	GT3 & 8 - Out due to low load demand by the Discos.
NIPP	GEREGU NIPP	3	GT21 & 23 2	290	290	GT21 & 23 2	290	249	GT21 - Generation reduced due to low load demand by the Discos. GT22 - Out on maintenance.
	SAPELE NIPP	4	GT2 1	112.5	112.5	GT2 1	112.5	90	GT1 - Out due to gas constraint. GT3 & 4 - Out due to high air filter differential pressure.
	ALAOJI NIPP GAS	4	0 0	0	0	0 0	0	0	GT1 - Out due to high air inlet differential pressure. GT3 - Shut down due to lack of spare part. GT4 - Tripped on over voltage lockout relay trip.
	OLORUNSOGO NIPP	6	GT1 1	126	108.7	GT1 1	108.7	108.7	GT2 - 3 - Shut down due to low gas pressure. GT4 - Out due to ignition failure and control relay failure alarm. ST13 & ST23 - Out on maintenance.
	OMOTOSHO NIPP GAS	4	GT2 1	125	115	GT2 1	115	106.7	GT1, 3 & 4 - Out due to gas constraint.
	ODUKPANI NIPP	5	GT1 - 5 5	575	575	GT3, 4 & 5 3	345	283.3	GT1 & 2 - Out due to low load demand by the Discos. GT3, 4 & 5 - On manual adjustment to frequency.
	IHOVBOR NIPP	4	GT2 1	112.5	112.5	GT2 1	112.5	105.6	GT1 & 4 - Out due to gas constraint. GT2 - On manual adjustment to frequency. GT3 - Tripped on high vibration.
	GBARAIN NIPP GAS	1	GT2 1	112.5	112.5	GT2 1	112.5	97.3	Available unit on bar.
IPP	OKPAI GAS/STEAM	3	GT12 & ST18 2	300	220	GT12 & ST18 2	220	178	GT11 - out on maintenance. ST18 - Generation limited due to boiler problem.
	AZURA - EDO	3	GT11 - 13 3	461	461	GT11 - 13 3	461	353	GT11 - Generation reduced due to low load demand by the Discos.
	AFAM VI GAS/STEAM	4	GT12 & 13 2	300	300	GT13 1	150	137	GT11 - Out on maintenance. GT12 - Out on low load demand by the Discos. ST10 - Out on gas constraint.
	IBOM POWER GAS	3	GT3 1	120	115	GT3 1	115	91.1	GT1 & 2 - Out due to fire outbreak on the control panel. GT3 - On manual adjustment to frequency.
	AES	9	0 0	0	0	0 0	0	0	Out of production since 27/09/2014.
	ASCO	2	0 0	0	0	0 0	0	0	ST1 - Shut down due to leakage in the furnace.
	OMOKU GAS	6	0 0	0	0	0 0	0	0	GT1, 3 & 5 - Out for installation of gas metering equipment on the main gas supply line. GT2 - Tripped on high vibration. GT4 - Out on major overhaul. GT6 - Out on maintenance.
	TRANS-AMADI	4	0 0	0	0	0 0	0	0	GT1 & 2 - Out due to low gas pressure. GT3 - Out on fault. GT4 - out on maintenance.
	RIVERS	1	GT1 1	180	160	GT1 1	160	110	Generation reduced due to low load demand by the Discos.
	SUB TOTAL	141	61	6488.5	5892.6	53	4901.6	4340.1	Frequency = 50.19Hz.

1.7B GENERATION POSITION AT 06:00HRS OF WEDNESDAY 06/02/2019 FOR UNITS ON BILATERAL AGREEMENT										
PARAS ENERGY	8	GT3 -10		70	68.8	GT3 -10		68.8	68.8	Available units on bar.
		8				8				
SUB TOTAL		8	8	70	68.8	8	68.8	68.8		
GRAND TOTAL		149	69	6558.5	5961.4	61	4,970.40	4,408.90	Frequency = 50.19Hz	

1.7C BILATERAL AGREEMENT UNITS DISPATCH -TUESDAY 05/02/2019										
EGBIN ST6 5MW GENERATION TO IKEJA ELECTRICITY DISTRIBUTION COMPANY										
FEEDERS NAME	MAX. LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HRS IN SERVICE	TOTAL (MWH)	REMARK			
OGBA	U-STEEL	ON	0100HRS			24		NIL		
	PTC EXPRESS	ON	0100HRS			24		NIL		
	SANKYO	2.5	0800HRS			24		NIL		
	FEEDER 8	13	1300HRS			24		NIL		
IKORODU	PULK IT	2	1500HRS			24		NIL		
	INDUSTRIAL	7	2000HRS			24		NIL		
	SPINTEX	8	0100HRS			24		NIL		
	DANGOTE	2	0800HRS			18		O/S ON E/F		
	LAND CRAFT	16	2400HRS			24		NIL		
ALAUUSA	TR4 15MVA	8.9	1700HRS			23		DUE TO TRIPPING OF OGBA/OTA 132KV LINE		
	TR5 -15MVA	5.9	1700HRS			23		DUE TO TRIPPING OF OGBA/OTA 132KV LINE		
	ALAUUSA	18.4	0900HRS			23		DUE TO TRIPPING OF OGBA/OTA 132KV LINE		
M/LAND	PTC (MARYLAND)	19	1100HRS			17		OUT DUE TO TRIPPING ON E/F		
TOTAL LOAD										

BILATERAL AGREEMENT LOAD DISPATCH 60MW PARAS ENERGY GENERATION TO CEB OF Tuesday 05/02/2019							
FEEDER	MAX LOAD (MW)	TIME (HRS)	MIN LOAD (MW)	TIME (HRS)	HOURS IN SERVICE	TOTAL (MWH)	REMARK
Ikeja West/Sakete 330kV line	68	19:00	60.8	16:00	24	1561.6	NIL

BILATERAL AGREEMENT MAIN STREAM ENERGY KAINJI TUESDAY 05/02/2019										
COMPANY NAME	VOL-TAGE LEVEL	CON-TRAC-TUAL LOAD (MW)	MAX LOAD (MW)	TIME	MIN LOAD (MW)	TIME	HOURS IN SERVICE	TOTAL (MWH)	REMARK	
INNER GALAXY	132kV line 2	0	44	09:00	10	20:00	24	642	SUPPLY NOT INTERRUPTED	
KAM STEEL		25.0	2	13:00	0.3	17:00	24	18.1	SUPPLY NOT INTERRUPTED	
ASHAKA CEMENT		0	9	20:00	4.1	08:00	20	152.7	SUPPLY NOT INTERRUPTED	
XING 1	33kV feeder	0	23.2	20:00	1.3	01:00	24	340.2	SUPPLY NOT INTERRUPTED	
XING 2		0	0:00	16:00	0.3	01:00	24	270.8	SUPPLY NOT INTERRUPTED	
KAM INTEGRATED		15	4.5	06:00	1.5	11:00	24	66.7	SUPPLY NOT INTERRUPTED	
OLAM FLOUR MILLS		3	1.9	05:00	0.8	08:00	24	32.9	SUPPLY NOT INTERRUPTED	
LORDSMITH		3	0.6	01:00	0.5	20:00	21	12.4	OUT OF SERVICE ON E/F&O/C	

1.8 HYDROLOGICAL DATA: WEDNESDAY 06/02/2019

	KAINJI	JEBBA	SHIRORO
HEAD WATER ELEVATION (METERS)	141.7	103.16	374.13
TAIL WATER ELEVATION (METERS)	105.15	74.1	270.4
GROSS OPERATING HEAD (METERS)	36.55	29.06	103.73
AVERAGE TURBINE DISCHARGE (M3/SEC)	1022.00	1266.00	205.00
AVERAGE SPILLAGE (M3/SEC)	358.00	490.00	0.00
AVERAGE TOTAL STATION DISCHARGE (M3/SEC)	1380.00	1756.00	205.00
COMPUTED INFLOW (M3/SEC)	1513.00	1270.00	83.00
STORAGE DIFFERENTIAL	133.00	-486.00	-122
MAXIMUM LEVEL FOR SPILLAGE COMMENCEMENT	141.73	103	382.50
MINIMUM LEVEL BELOW WHICH NO GENERATION	130	99	355.00

1.9 MAXIMUM/ALLOCATED LOAD/MINIMUM LOADS FOR ABUJA AND LAGOS AS AT TUESDAY 05/02/2019

	MAXIMUM LOAD (MW)	TIME (HRS)	ALLOCATED LOAD (MW)	MINIMUM LOAD (MW)	TIME (HRS)
ABUJA	560.1	24:00	563.5	412.2	08:00
EKO	527.1	01:00	591.17	361.4	11:00
IKEJA	597.3	23:00	669.78	313.1	16:00

2.0 GAS POSITION: WEDNESDAY 06/02/2019

STATION	SIGNED ACQ Annual Contracted Quantity MMSCF/D	INSTALLED CAPACITY OF THERMAL STATIONS (MW)	PREVIOUS DAY OFF-TAKE (MMSCF/D)	CAPABILITY OF UNITS ON BAR OF THERMAL STATIONS (MW)	DIFFERENCE (MW)
EGBIN P/S	582	1100	565	535	535
DELTA (GAS)	266	915	310	605	605
OMOTOSHO GAS	127.9	336.8	131.4	205.4	205.4
OMOTOSHO NIPP	107	500	120	380	380
OLORUNSOGO (GAS)	233.1	336	181	155	155
OLORUNSOGO NIPP	0	750	108.7	641.3	641.3
SAPELE NIPP	87.8	500	112.5	387.5	387.5
SAPELE STEAM	0	720	0	720	720
AFAM IV-V	0	300	50	250	250
AFAM VI	136	650	150	500	500
GEREGU GAS	268	435	290	145	145
GEREGU NIPP	252	435	290	145	145
OKPAI (GAS/STEAM)	236	480	220	260	260
ALAOJI NIPP	72.8	504	74.5	429.5	429.5
IHOVBOR NIPP	92.4	337.5	112.5	225	225
IBOM	93.6	198	115	83	83
ODUKPANI NIPP	199.1	625	345	280	280
TOTAL	2753.7	9122.30		3175.6	5946.7

1 MMSCF IS EQUIVALENT TO 3.75MW

3.0 SPINNING RESERVE FOR : TUESDAY 05/02/2019

	(MW)	TIME	FREQUENCY
Maximum (MW)			
Minimum (MW)			
AVERAGE (MW)			

3.1 SYSTEM SPINNING RESERVE AS AT 0600HRS OF WEDNESDAY 06/02/2019 = 0MW FREQUENCY 50.19Hz.

S/N	POWER STATION	UNIT ON SPINNING RESERVE	CONTRACTED RESERVE	ACTUAL RESERVE (MW)	TOTAL (MW)
1	Egbin	ST2	100	0	0
		ST4		0	
		ST5		0	
		ST6		0	
2	Delta	GT16	40	0	0
		GT17	40	0	
3	Olorunsogo NIPP	GT1	40	0	0
		GT2		0	
		GT3		0	
		GT4		0	
4	Geregu NIPP	GT22	35	0	0
5	Omotosho NIPP	GT1	40	0	0
		GT2		0	
		GT3		0	
		GT4		0	
TOTAL (MW)			295	0	0

4.0 UNAVAILABLE GENERATION CAPABILITY

The unavailable generation capability for Wednesday 06/02/2019 as at 0600Hrs was = 1194MW.

S/N	STATION	ACTUAL GENERATION CAPABILITY (MW)	GENERATION AT 0600HRS (MW)	UNAVAILABLE GENERATION CAPABILITY (MW)	SUB-TOTAL
4.1 DUE TO LINE CONSTRAINTS					
1	Geregu Gas GT11	145	0	145	145
				0	
				0	
				0	
4.2 DUE TO LOW LOAD DEMAND BY THE DISCOS					
1	Shiroro 411G2	150	60	90	749
2	Alam VI GT12	150	0	150	
3	Olorunsogo Gas GT1 - 8	304	181	123	
4	Azura-Edo GT11	153	75	78	
5	Odukpani GT1 & 2	230	0	230	
6	Rivers GT1	160	110	50	
7	Geregu NIPP GT21	145	117	28	
				0	
				0	
4.3 DUE TO WATER MANAGEMENT:					
1	Shiroro 411G3 & 4	300	0	300	300
Grand Total					1194

5.0 OUTAGES:

5 (A) FORCED OUTAGES (GENERATION):

- 1 10:06 through 24:00Hrs, Sapele Steam ST3 tripped on thrust bearing wear very high turbine trip level. LHR = 40MW
- 2 13:54 - 16:35Hrs, Kainji 1G5 tripped due to the tripping of kainji/Jebba 330kV line 1 (cct K1J). LHR = 115MW
- 3 17:06 - 18:42Hrs, Gbarain GT2 tripped due to low gas pressure. LHR = 86.2MW
- 4 19:40 through 24:00Hrs, Alaoji NIPP GT2 tripped due to tripping of Alaoji NIPP/Alaoji T.S 330kV line 2 at Alaoji NIPP end on line differential. LHR = 25MW
- 5 21:17 - 22:33Hrs, Rivers IPP GT1 tripped due to the tripping of Afam/PH/IPP 132kV lines 1 & 2. LHR = 153MW

5 (B) FORCED OUTAGES (TRANSMISSION):

- 1 00:33 - 01:2Hrs, Ayede/McPherson/Shagamu 132kV line CB tripped at Ayede T/S on optimho relay, location = 24.36km, period = 62.5ms. LHR = 40MW
- 2 00:55 - 17:43Hrs, McPherson T/S 40MVA 132/33kV transformer T1 primary & secondary CBs tripped on general trip & differential relay. LHR = 1.1MW
- 3 00:55 - 18:16Hrs, Ayede T/S 60MVA 132/33kV transformer T2 primary & secondary CBs tripped on differential & REF relay. LHR = 21MW
- 4 12:31 - 12:52Hrs, Jos/Gombe 330kV line (cct S1E) CB tripped on lockout relay: phase not together , phase not together time delay. LHR = 142MW
- 5 13:42 - 14:15Hrs, Ikeja-West /Sakete 330kV line (cct NWIBS) CB tripped at Ikeja-West T/S on the following relay indications:
Siprotec relay – General trip, RPH fault, YPH fault, BPH fault, backup O/C STUB OBTD 5x-BUIP O/C, PU time = 403ms, trip time = 302ms, distance = 535km
Micom relay: General trip, phase ABC, O/C start > 124 O/C trip >2, fault duration = 399ms, relay time = 79.8ms. LHR = 248MW
- 6 13:55 through 24:00Hrs, Kainji/Jebba 330kV line 1 (cct K1J) CBs tripped at both ends on the following relay indications:
At Jebba T/S:
ABB relay: Trip, DLS-STF WL2, PLS-STF-WPE, ZCom CR, DEFCS, distance = 70.8km
Micom relay: Trip DIT
Auxiliary relay: 85X, K86ABC
At Kainji T/S:
Optimho relay: Zone 1 B-N, location = 11.25km, period = 47ms,
Energorelay: Start L2, Start PE. No load loss as cct K2J was in service.
- 7 21:17 - 21:48Hrs, Afam/Port Harcourt/IPP 132kV lines 1 & 2 CBs tripped at Afam T/S on instantaneous O/C & E/F. LHR = 60MW and 19.1MW respectively

5 (C) PLANNED OUTAGES:-

- 1 09:27 - 15:01Hrs, Ikeja-West T/S 150MVA 330/132kV transformer T2A was taken out for annual preventive maintenance on the transformer and its associated equipment. No load loss as 150MVA 330/132kV transformer T2B was in service.
- 2 10:52 - 15:28Hrs, Ajah/Lekki/Alagbon 330kV line was taken out for annual preventive maintenance on the terminal equipment at Lekki T.S. Load loss = 58MW
- 3 11:02 - 16:49Hrs, Sapele/Benin 330kV line 1 (cct S3B) CB was taken out of service on annual preventive maintenance. No load interruption as ccts S4B & S5B were in service
- 4 11:47 - 13:36Hrs, Egbin T/S 150MVA 330/132/33kV IBTR2 was taken out for annual preventive maintenance on #CB52-3 and its associated equipment. No Load loss as CB52-2 was in service.

5 (D) URGENT OUTAGES:-

- 1 11:04 - 11:25Hrs, Apo T/S 100MVA 132/33kV transformer TR4 was taken out of service for maintenance crew to refill low SF6 gas on the primary CB Red phase. Load loss = 26.7MW

9 GENERATOR MERIT ORDER BASED ON SYSTEM RESPONSE AND GRID RELIABILITY

GROUP 1 - HYDRO UNITS (LEAST COST) ON FREE GOVERNOR CONTROL AND ANCILLARY SERVICE.

5 (E) EMERGENCY OUTAGES:- The undermention lines were opened on frequency control.

- 1 15:44 - 15:50Hrs, Osogbo T/S 150MVA 330/132/33kV transformer T1 secondary CB was opened on frequency control. Load loss = 50MW. Frequency was 49.80Hz.
- 2 20:14 - 20:16Hrs, Osogbo/Akure line. Load loss = 51MW. Frequency was 49.80Hz.

5 (F) AUTOMATIC UNDER FREQUENCY OPERATION:- Nil.

5 (G) 330KV LINES THAT ARE OUT ON VOLTAGE CONTROL:- ccts A1S & U1A.

5 (H) 330KV LINES THAT ARE OUT ON BREAKER PROBLEM:- cct A1K.

5 (I) 330KV LINES THAT ARE OUT ON PLANNED OUTAGE:- NIL

5 (J) 330KV LINES THAT ARE OUT ON LINE FAULT:- ccts D3T, J2H & K4U

5 (K) 330KV LINES THAT ARE ON SOAK:- ccts F1K & N4J

6 WEATHER REPORT:- Rainfall reported at New Haven

7 INTERNATIONAL LINES:-

A IKEJA WEST/SAKETE 330KV LINE(TCN+PARAS)

Maximum load - 269MW at 20:00Hrs.
Minimum load - 153MW at 15:00Hrs.

B BIRNIN KEBBI/NIAMEY 132KV LINE

Maximum load - 96MW at 20:00Hrs.
Minimum load - 62MW at 08:00Hrs.

C KATSINA/GAZAOUA/MARADI 132KV LINE

Maximum load - 30.5MW at 21:00Hrs.
Minimum load - 17.5MW at 03:00Hrs.

8 MISCELLANEOUS:-

- 1 00:04-19:45Hrs, Shiroro 411G2 was shut down due to low load demand by the Discos. Load loss = 50.27MW
- 2 00:16 - 16:46Hrs, Azura-Edo GT11 was shut down due to low load demand by the Discos. Load loss = 75MW

GROUP 2A - UNITS FROM ODUKPANI, AZURA, SHELL AFAM VI, AGIP OKPAI, OLORUNSOGO POWER PLC AND OMOTOSHO POWER PLC.

GROUP 2B - OTHER GENERATING UNITS IDENTIFIED TO BE ON FREE GOVERNOR CONTROL.

GROUP 3 - OTHER UNITS IDENTIFIED TO BE OFFERING REGULATORY RESERVE.

GROUP 4 - OTHER UNITS OFFERING SPINNING RESERVE (THE POWER PLANTS CONTRACTED FOR THE ANCILLARY SERVICE).

GROUP 5 - ALL PLANTS DISPATCHED SUBJECT TO TRANSMISSION CONSTRAINT (NOT YET IDENTIFIED).

GROUP 6 - ALL PLANTS PROVIDING VOLTAGE SUPPORT ABOVE STATUTORY LIMIT (NOT YET IDENTIFIED).

STATIONS	NO INSTALLED	NO. WORKING
PLC/PAX	38	34
OPTIC FIBRE	13	12
PLS	14	4

11 **SCADA RTU STATUS**

STATIONS	NO. INSTALLED	NO OF RTU DISTURBED	NO OF RTU WORKING
POWER STATIONS	8	4	4
330kV	19	7	12
132kV	102	79	23

12(A) **UNAVAILABLE TRANSFORMERS/REACTORS:**

SHIRORO REGION:

- 1 Birnin Kebbi 75MX Reactor R1.

ABUJA REGION

- 1 Apo T/S 60MVA 132/33kV transformer TR3 - Burnt.

KADUNA REGION:

- 1 Kumbotso 150MVA 330/132/33kV transformer T1A - Burnt control cables.

BAUCHI REGION:

- 1 Gombe T/S -30MX Reactor R2A.

ENUGU REGION:

- 1 Onitsha T/S 90MVA 330/132/13.8kV transformer 9T2 - Out due to differential fault.

LAGOS REGION:

- 1 Oke-Aro T/S: 75MX Reactor R1.

PORT HARCOURT REGION

- 1 Ikot-Ekpene T/S: No reactor installed.

12 (B) **UNAVAILABLE BREAKERS/ISOLATORS**

LAGOS REGION:

- 1 Akangba T/S. 132kV Bus Coupler CB - Serious Air leakage.(Undergoing repair)
- 2 Egbin/Aja 330kV line 2 (cct N4J) - faulty breaker at Aja T/S
- 3 Otta/Ogba 132kV line isolator - defective control shaft.
- 4 Osogbo/Ikeja West and Olorunsogo/Ikeja West tie CB at Ikeja West T/S - defective pole .
- 5 Oke-Aro/Ikeja West 330kV lines 1 & 2 tie CB at Ikeja West T/S - Defective pole.
- 6 Omotosho/Ikeja West 330kV line CB at Ikeja West T/S.

- 3 00:33 – 05:10Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 80MW
 - 4 00:59 -21:48Hrs, Odukpani GT5 was shut down due to low load demand by the Discos. Load loss = 100MW
 - 5 01:25 - 19:18Hrs, Afam VI GT12 was shut down due to low load demand by the Discos. Load loss = 139MW
 - 6 06:33Hrs, Sapele Steam ST3 was tied. The unit was out due to low water drum level.
 - 7 12:26Hrs, Alaoji NIPP GT1 was tied to swap with GT2.
 - 8 12:43 through24:00Hrs, Alaoji NIPP GT2 was shut down and the load transferred to GT1.
 - 9 15:45Hrs, Shiroro/Tegina 132kV line was restored.The line was out at to erected collapsed tower #183 .
 - 10 16:54Hrs, Omotosho T/S 165MVA 16.5/330kV main generator transformer MT3 CB was restored after all the alarms were cleared by NIPP phase 2 generation maintenance crew.
 - 11 19:23Hrs, Odukpani GT2 was tied. The unit was due to low load demand by the Discos.
 - 12 20:31Hrs, Olorunsogo gas GT6 was tied. The unit was due to low load demand by the Discos.
 - 13 20:42Hrs, Odukpani GT1 was tied. The unit had been out on fault.
 - 14 20:54 through24:00Hrs, Shiroro 411G3 was shut down due to low load demand by the Discos. Load loss = 150MW
 - 15 22:00 through24:00Hrs, Odukpani GT2 was shut down to swap with GT5. Load loss = 55MW
 - 16 22:55 through 24:00Hrs, Jebba 2G2 was shut down due to low load demand by the Discos. Load loss = 50MW
- **** **THE SCADA COVERAGE OF ONLY LIMITED AREAS IS NOT GOOD FOR THE SMOOTH OPERATION OF THE GRID.**
- **** **LACK OF REACTOR AND UNRELIABLE STATION SERVICE SUPPLY AT IKOT-EKPENE T/S ARE HINDERING SMOOTH OPERATION.**

12(D) **UNAVAILABLE CAPACITOR BANK:**

- 1 (i) Ogba T.S, (ii) Maiduguri T/S, (iii) Isolo T/S, (iv) Ado-Ekiti T/S, (v) Ilorin T/S, (vi) Akure T/S.

12(E) **UNAVAILABLE SKYWIRES**

LAGOS REGION

- 1 Omotosho/Ikeja West line (M5W) and Egbin/Ikeja West line 3 (N6W) - 21 spans.
- 2 Ikeja West/Olorunsogo line (cct R1W) - 80 spans.
- 3 330kV Ikeja West/Osogbo line. - 95 spans.
- 4 Ikeja West/Alimosho/Ogba 132kV lines 1 & 2 - 15 spans.
- 5 Ikeja West/Akangba 330kV line 2 - 1 span.
- 6 Ikeja West/ Ilupeju 132kV lines 1 & 2 - 8 spans.
- 7 Akangba/tire 132kV lines 1 & 2 - 1 span.
- 8 Ikeja West/Agbara 132kV lines 1 & 2 - 61 spans.
- 9 Ikeja West/Otta 132kV lines 1 & 2- 17 spans.

SHIRORO REGION

- 1 Jebba T/S 330kV Osogbo lines 1 & 2 and Ganmo line - 9 spans
- 2 Minna T/S 132kV Bida line - 32 spans
- 3 Shiroro T/S 330kV Jebba line 2 - 28 spans

ABUJA REGION

- 1 Apo T/S 132kV Keffi line - 36 spans

12 (F) **UNAVAILABLE SYNCHROSCOPES -**

- 1 Ikeja West, Onitsha, Egbin, Uguwaji, Jos, Gwagwalada & Alaoji T/S.

BENIN REGION:

- 1 Omotosho T/S 330kV, 2nd series 330kV CB #3322 out due to control circuit problem.

ENUGU REGION:

- 1 New Haven/Yandev 132kV line CB - Faulty Red phase CB pole. Protection is transferred to the bus coupler CB.
- 2 Abakaliki T/S 30MVA 132/33kV transformer T1A and 60MVA 132/33kV transformer T2 primary CBs - Breakers were not provided since commissioning but the
- 3 Oji River T/S 30MVA 132/33kV transformer T1A primary CB - The breaker is completely out of service and bypassed. The transformer is either protected by Onitsha/Oji 132kV line CB or New Haven/Oji 132kV line CB.
- 4 Oturkpo/Yandev 132kV By pass isolator - Canibalized to repair the line isolator.
- 5 New Haven/Nkalagu 132kV line 2 ground switch - Canibalized Red phase female contact and canibalized Yellow phase male contact.

SHIRORO REGION

- 1 Jebba T/S 75MX reactor 2R2 CB - exploded.

FOR MORE INFORMATION: NCC Telephone Lines -

- a PAX 09/300, 309, 303 & 305.
- b NCC GSM - 08074888524, 08069379367, 08023572651 & 08051401331. CUG Nos. 08129458488, 08129458489, 08129929806; 08036665323.
- c PLS - 622
- d GM (NCC) - 08036744641.
- e AGM (S/O) - 08056002757, CUG: 08129458475

